20051231.ba v03_n875.bam.20051231

>From ???@??? Sat Dec 31 00:10:30 2005 -0600
Date: Sat, 31 Dec 2005 06:09:52 GMT
From: Old Tube Radios <boatanchors@theporch.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: BOATANCHORS digest 3875
Message-Id: <20051231060814.E018C408E3@srvr1.theporch.com>

BOATANCHORS Digest 3875

Topics covered in this issue include:

1) Tube Cap "Glue"
by <mike46@cwjamaica.com>
2) Re: Tube Cap "Glue"
by Scott Robinson <spr@earthlink.net>
3) Re: Tube Cap "Glue"
by stuck in 50s <polepeeg@ba-watch.org>
4) Re: Tube Cap "Glue"
by Al Klase <skywaves@webex.net>
5) Re: GB> 200-300MHz FM Broadcast Band?
by ail0@att.net
6) Re: GB> 200-300MHz FM Broadcast Band?
by "Edward J White" <wa3bzt@verizon.net>
7) Re: Tube Cap "Glue"
by Scott Robinson <spr@earthlink.net>
8) Tube Cap "Glue" [High Temperature Adhesives]
by "Dr. Barry L. Ornitz" <ornitz@charter.net>
9) Re: Tube Cap "Glue" [High Temperature Adhesives]
by Bob Roehrig <broehrig@aurora.edu>
10) WTB/WTS and a question
by Brian K Harris <brian.k.harris@philips.com>
11) RE: WTB/WTS and a question
by "Art Lebermann" <artleb@earthlink.net>
12) Re: KPH east? Expedition to WSL
by David Stinson <arc5@ix.netcom.com>
13) RE: WTB/WTS and a question
by ail0@att.net
14) Re: WTB/WTS and a question
by Bob Roehrig <broehrig@aurora.edu>
15) Re: WTB/WTS and a question
by "Arden Allen" <gumbear@pacbell.net>
16) Addenda to: High Temperature Adhesives
by "Dr. Barry L. Ornitz" <ornitz@charter.net>
17) Re: Addenda to: High Temperature Adhesives
by WA5CAB@cs.com
18) FW: Addenda to: High Temperature Adhesives

by "Dr. Barry L. Ornitz" <ornitz@charter.net>

From: <mike46@cwjamaica.com>
Subject: Tube Cap "Glue"
To: Old Tube Radios <boatanchors@theporch.com>
Date: Wed, 28 Dec 2005 19:48:19 -0500
Message-ID: <web-17737651@cwjamaica.com>
MIME-Version: 1.0
Content-Type: text/plain; charset="ISO-8859-1"; format="flowed"
Content-Transfer-Encoding: 8bit

I know this has been discussed before but when you have a faulty memory...

What's the best "glue" for re-fastening a tube cap to the glass envelope? (6F7) The original material looks like the brown stuff that's used to cement on tube bases. Soldering will hold it on, but mechanically solid would be much preferred.

Mike VE7MMH

Mime-Version: 1.0
Message-Id: <p06230900bfd93e3b3cb2@[192.168.1.2]>
Date: Wed, 28 Dec 2005 23:20:13 -0800
To: Old Tube Radios <boatanchors@theporch.com>
From: Scott Robinson <spr@earthlink.net>
Subject: Re: Tube Cap "Glue"
Content-Type: text/plain; charset="us-ascii" ; format="flowed"

Mike,

I use the equal volume two part epoxy resin that TAP plastics sells. You have to buy a pair of 1 pint cans, but I use the stuff for lots of other things, fiberglass work in particular.

Regards,

Scott

>I know this has been discussed before but when you have a faulty memory...
>
>What's the best "glue" for re-fastening a tube cap to the glass
>envelope? (6F7) The original material looks like the brown stuff
>that's used to cement on tube bases. Soldering will hold it on, but
>mechanically solid would be much preferred.

>
>Mike VE7MMH

Date: Thu, 29 Dec 2005 07:57:51 -0500 (EST)
From: stuck in 50s <polepeeg@ba-watch.org>
Message-Id: <200512291257.jBTCvpSE027818@fracas.netboobie.org>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Tube Cap "Glue"

Mike & Scott... I've had epoxy assymetrically 'pull' glass & crack it. Like an 811A I keep around as a reminder. One where I tried to re-fasten a loose tube base.

On the 6F7 cap. I find Elmer's Carpenter's Glue does FB if there's enuf of the pourous original 'brown stuff' left. And solder cap while glue unset as heat hastens curing a lot.

Like I'm an expert or something

'rm

Message-ID: <43B4043F.5010806@webex.net>
Date: Thu, 29 Dec 2005 10:43:59 -0500
From: Al Klase <skywaves@webex.net>
MIME-Version: 1.0
To: Old Tube Radios <boatanchors@theporch.com>
CC: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Tube Cap "Glue"
Content-Type: text/plain; charset=ISO-8859-1; format=flowed
Content-Transfer-Encoding: 7bit

I've been happy with the High-Temperature RTV adhesives from the auto store. Stays pliable, sticks to anything, and good to something like 700 degrees.

Al

--
Al Klase - N3FRQ
Flemington, NJ
http://www.skywaves.ar88.net/

From: ail0@att.net
To: Old Tube Radios <boatanchors@theporch.com>

Subject: Re: GB> 200-300MHz FM Broadcast Band?
Date: Thu, 29 Dec 2005 17:03:11 +0000
Message-Id:
<122920051703.15070.43B416CD000F186100003ADE2158766720CF04070E@att.net>

I haven't read the book and don't remember the show, but perhaps the following would be of interest:

Armstrong set up his "Yankee Network" of FM stations that stretched from either MD or VA up into the Finger Lakes region of New York. Each station picked up the signal from the station south of it and re-broadcast it. The middle station of the link was
Armstrong's experimental station in Alpine, NJ, just across the Hudson river from NYC. As an experimental station, he was prohibited from broadcasting commercials, but as one of the links in the chain, he had to carry them. So he had the predecessor station put the commercials on a subchannel which was not detected by a conventional FM receiver. The station after his in the link detected the pilot tone and decoded the subchannel and broadcast the commercials to its audience and to its successor station! The Yankee network was an 'affront' to Sarnoff who felt it detracted from his NBC network franchise.

They used the same subcarrier scheme on WFMZ in Allentown, PA for 'storecasting" They put special receivers in the local busses and stores that detected the pilot tone and turned up the volume so that the commercials would be heard on the buses and in the stored, but not in home radios. (That was right after Sarnoff got the
FM channels moved to 88 - 108 mcs, thus invalidated the existing receivers (Pilotuners). Professor Karakash of the Lehigh U EE department, modified his receiver for the new band. It turned out that he was their only non-storecast listener, so they used to say good morning to him when the came on the air. The storecast scheme was not financially viable and died off after a while.

I knew and worked with the Patent Attorney who had represented Armstrong in his many suits against RCA and others. Armstrong invented and demostrated the superregenerative receiver as part of his defense of his patents.

A great man was lost when he stepped out of his window.

Anyone know where I can get a copy of that tape? Is it on DVD?

Art KeHBA

Date: Thu, 29 Dec 2005 13:26:43 -0500
From: "Edward J White" <wa3bzt@verizon.net>
Subject: Re: GB> 200-300MHz FM Broadcast Band?
To: Old Tube Radios <boatanchors@theporch.com>
Message-id: <001601c60ca5$6bdd9a20$6401a8c0@wa3bzt>
MIME-version: 1.0
Content-type: text/plain; format=flowed; charset=iso-8859-1; reply-type=original
Content-transfer-encoding: 7bit

Hi Gang:
I have heard that when GE took over they destroyed just about everything

with RCA on it. In Camden NJ most of all the buildings that were RCA are all gone except the original building which has Victor on it and the early RCA Victor logo the dog and the victrola.
There is a book "His Master's Voice" in America, Published by General Electric Company printed September 1991 Tells the story of the company.

Ed
WA3BZT
----- Original Message -----
From: "Sandy W5TVW" <ebjr@i-55.com>
To: "Old Tube Radios" <boatanchors@theporch.com>
Sent: Wednesday, December 28, 2005 5:12 PM
Subject: Re: GB> 200-300MHz FM Broadcast Band?

```
>| Looks like I'm not the ONLY one around here who appreciated Ken Burns
> | EMPIRE OF THE AIR!!!   ;o)
>
> NO!  I have the video I rcorded off the local PBS station in New Orleans
> plus the book.  The book is much more "in depth".
>
> |
> | I got REAL lucky recently and found a laserdisk copy of EMPIRE... it
> looks
> | even BETTER than the
> | VHS tape copy of it I ripped off of the PBS satellite distribution
> downlink
> | at work!
> |
> |
> | Anyone else here read the book he based the film on? Sarnoff comes off
> as
> | even MORE of a bastard,
> | and Edwin Howard Armstrong's legend rises even MORE in stature (and
> | deservedly so!).
> |
> |
> I wonder if someone, some day, will write about how much of a "bastard"
> Bill Gates was and is?  Sarnoff was giving us a lot of good products and
> design (for the most part).  He wasn't in comparison enriching himself
> nearly as much as Gates is!  Too bad Microsoft doesn't write software
> as well as RCA made electron tubes!
>
> | Interesting part of the tale, not told in the film or book... the piracy
> of
> | the FM band resulted
> | in the creation of TV channel ONE (44 - 50 MHz)! Oddly, Sarnoff had more
> | respect for the new six
```

> | meter ham band than he had for Armstrong's FM broadcast service.
> |
> |I think what Sarnoff REALLY wanted was to make Armstrong's network
> and systems "obsolete".   In the meantime, Sarnoff would profit from
> selling sets for the "new" FM band! The old "freeze out the competitors"
> game "corporate america" still carries on.
>
> The real "oddball" of the "Empire" story to me was Lee DeForest.
> Unfortunately
> we have "ripoff artists" like Mr. White with us today enriching themselves
> and ripping off the public and whoever they are "helping" in the process.
>
> Has anybody on this reflector visited the old RCA building (now GE
> building)?
> Are any of the murals and art deco stuff RCA and Sarnoff embellished it
> with
> still there? I do understand that the old RCA LF site at Rocky Point on
> Long Island is no more and nothing much still remains of that facility.
>
> | --
> | No virus found in this incoming message.
> | Checked by AVG Free Edition.
> | Version: 7.1.371 / Virus Database: 267.14.8/215 - Release Date:
> 12/27/2005
> |
> |
>

Mime-Version: 1.0
Message-Id: <p06230901bfd9e25db56f@[192.168.1.2]>
Date: Thu, 29 Dec 2005 11:00:36 -0800
To: Old Tube Radios <boatanchors@theporch.com>
From: Scott Robinson <spr@earthlink.net>
Subject: Re: Tube Cap "Glue"
Content-Type: text/plain; charset="us-ascii" ; format="flowed"

Folks,

The epoxy I use (TAP plastics equal volumes stuff in two cans)
remains a little flexible after it sets. I have used it for this
purpose a number of times and it hasn't cracked any tubes so far.

/scott

At 7:57 AM -0500 12/29/05, stuck in 50s wrote:
>Mike & Scott... I've had epoxy assymetrically 'pull' glass & crack it.
>Like an 811A I keep around as a reminder. One where I tried to re-fasten

>a loose tube base.
>
>On the 6F7 cap. I find Elmer's Carpenter's Glue does FB if there's enuf
>of the pourous original 'brown stuff' left. And solder cap while glue
>unset as heat hastens curing a lot.
>
>Like I'm an expert or something
>
> 'rm

From: "Dr. Barry L. Ornitz" <ornitz@charter.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Tube Cap "Glue" [High Temperature Adhesives]
Date: Thu, 29 Dec 2005 21:16:57 -0500
Message-ID: <001a01c60ce7$1d93c500$10175047@barry1>
MIME-Version: 1.0
Content-Type: text/plain;
    charset="us-ascii"
Content-Transfer-Encoding: 7bit

Mike, VE7MMH, asked:

> What's the best "glue" for re-fastening a tube cap to the glass envelope?
> (6F7) The original material looks like the brown stuff that's used to
> cement on tube bases. Soldering will hold it on, but mechanically solid
> would be much preferred.

Several folks have already answered with suggestions, but allow me to add a little to the knowledge base.

The original tube cap glue is a very cheap thermosetting phenolic-based mixture. About the only folks using it today are the light bulb manufacturers, and surprisingly enough, most are located in the countries that still make vacuum tubes (China, Hungary, Czechoslovakia, Poland, etc.). This glue is both porous and friable. Instead or worrying about matching thermal coefficients of expansion, the glue just crumbles a little.

Today a number of materials are available that will work for gluing on a plate cap. But remember the type of tube and the service temperature is important. Something that works with a small receiving tube may burn up when used on a cap for a large transmitting tube.

Epoxy glues will generally work reasonably well for receiving tubes. But remember the differing coefficients of thermal expansion between the tube and the epoxy itself. You do _NOT_ want to use a "1-minute" or other fast curing epoxy here. The fast curing stuff is brittle and very rigid. A 24-hour curing epoxy is much better here. However most conventional epoxies are only rated to temperatures between 105 to 130 C (221 to 266 F). There are, however, special epoxies rated to 260 C (500 F).

High temperature silicone rubber adhesives also work quite well for receiving tubes. Bathtub caulk silicones cannot take the high temperatures. I suggest GE RTV-106, RTV-116 or RTC-159 which are rated to 260 C (500 F). All of these are somewhat flexible.

For transmitting tubes, where the plate lead gets quite hot, and may, in fact, be used to transfer heat to an external radiator, epoxies or silicones are unsuitable. An old chemical laboratory standby that may be used is Sauereisen Cement. This is a silicate based inorganic cement that sets very hard. It adheres well to glass and metal. Though quite old, the company is still very much in business, and today they make a broad line of very high temperature adhesives. Many are rated for as high as 2500 F (1371 C). Buying in small quantities may be a problem.

Having said all of this, I have several suggestions for finding these materials.

High temperature silicone adhesive can be found in most auto parts stores sold as Permatex Red (high temperature). A small tube is not very expensive and you will surely find other uses in the shop. Their RED products are rated for continuous service at 400 F (204 C) with intermittent service as high as 700 F (371 C). This uses acetoxy cure chemistry, so acetic acid will be released upon curing. Some of the RTV products use a two-part cure and do not release acid fumes.

High temperature epoxy may be ordered from Omega (http://www.omega.com). I suggest their Omega-Bond 200 epoxy which is a two-part epoxy that sets in two hours at 400 F and is rated to 500 F. A two-ounce tube is available from Omega for $12 US.

Omega also carries a line of the ceramic cements too. One type sets by drying in air, the other type by chemically curing. Of the air-dry types, Omega Bond 300, 400, and 500 are suitable; their maximum rated service temperatures are respectively 982, 1426, and 1204 C (1800, 2600, and 2200 F). In the chemical curing types, Omega sells Omega Bond 600, 700, and CC cements. These are rated respectively for 1426, 871, and 843 C (2600, 1600, and 1550 F). For other details on mechanical properties and pricing, see their website. Many of these are a little pricey. I suspect that they are repackaged versions of the Sauereisen products. The "CC" product is about the least expensive at $16 US.

For gluing on loose tube bases, I have used the really inexpensive cyanoacrylate adhesives (super-glues) as well as silicone sealants. No doubt some of the moisture curing urethane adhesives would work here too.

73, Barry   WA4VZQ   Ornitz@tricon.net

Date: Thu, 29 Dec 2005 21:43:09 -0600 (CST)
From: Bob Roehrig <broehrig@aurora.edu>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Tube Cap "Glue" [High Temperature Adhesives]
Message-ID: <Pine.LNX.4.61.0512292141590.1365@hermes.aurora.edu>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII; format=flowed

On Thu, 29 Dec 2005, Dr. Barry L. Ornitz wrote:

> Several folks have already answered with suggestions, but allow me to add a little to the knowledge base.

Dr Barry comes thru again! WHat would we do if we didn't have him on this list ?!

Bob Roehrig
Aurora University   Telecom dept.
broehrig@aurora.edu
K9EUI W9ZGP WC2XSR/11 WD2XSH/19
630-844-4898   fax 630-844-4222
"Nostalgia is a thing of the past"

To: Old Tube Radios <boatanchors@theporch.com>
Subject: WTB/WTS and a question
MIME-Version: 1.0
Message-ID: <OFE3085509.D49026B3-ON882570E7.005778D1-862570E7.0059F8F5@philips.com>
From: Brian K Harris <brian.k.harris@philips.com>
Date: Fri, 30 Dec 2005 10:21:15 -0600
Content-Type: text/plain; charset="US-ASCII"

Good Morning,

1. I would like to buy or swap for two solid state plug-in replacements for the 872A mercury vapor rectifiers for my KW-1. Enuf said.

2. I am restoring a broadcast/shortwave radio set for my brother. It is an RCA 8BT, battery operated 'farm set' from the 30's. In addition to using three 45V batteries in series for the 135V B+, it used four small 1.5V cells for biasing the 1st detector and the 1st and 2nd IF's, and a

multi-tapped battery to get 3V bias for the 2nd detector and 7.5V bias for the audio driver. As my brother doesn't live on an electricity deprived farm, I am building a solid state AC supply to meet those needs.

The tubes all have 2V filaments. The radio has two inputs for a filament supply, 2V or 2.5V (the 2.5V input merely inserts a series resistor). My question is....why did anyone manufacture 2V filament tubes and what kind of battery put out 2V or 2.5V? I am building a solid state supply for the 2V requirement as well so the question is merely to satisfy my curiosity.

By the way, this set uses a pair of push-pull 49's for the audio output stage. These are zero bias tubes in Class B with 3.5W capability. Very cool.

Thanks for reading,

Brian WA5UEK

Message-ID: <410-22005125301711244O4@earthlink.net>
From: "Art Lebermann" <artleb@earthlink.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: RE: WTB/WTS and a question
Date: Fri, 30 Dec 2005 09:11:24 -0800
MIME-Version: 1.0
Content-type: text/plain; charset=US-ASCII

Brian....

A single cell of a lead-acid storage battery produces 2 volts. I'd guess this is the reason for early vacuum tubes with 2 volt filaments?

73,
Art Lebermann
W6REQ

> [Original Message]
> From: Brian K Harris <brian.k.harris@philips.com>
> To: Old Tube Radios <boatanchors@theporch.com>
> Date: 12/30/2005 8:22:48 AM
> Subject: WTB/WTS and a question
>
> 2. I am restoring a broadcast/shortwave radio set for my brother. It is
> an RCA 8BT, battery operated 'farm set' from the 30's.
>
> The tubes all have 2V filaments. The radio has two inputs for a filament

> supply, 2V or 2.5V (the 2.5V input merely inserts a series resistor). My
> question is....why did anyone manufacture 2V filament tubes and what kind
> of battery put out 2V or 2.5V? I am building a solid state supply for
the
> 2V requirement as well so the question is merely to satisfy my curiosity.

Date: Fri, 30 Dec 2005 12:44:47 -0600
From: David Stinson <arc5@ix.netcom.com>
Subject: Re: KPH east? Expedition to WSL
To: Old Tube Radios <boatanchors@theporch.com>
Cc: Old Tube Radios <boatanchors@theporch.com>
Message-id: <43B5801F.7010908@ix.netcom.com>
MIME-version: 1.0
Content-type: text/plain; charset=us-ascii; format=flowed
Content-transfer-encoding: 7bit

The most valuable pieces of equipment were left behind.
Can you spot them?

From: ail0@att.net
To: Old Tube Radios <boatanchors@theporch.com>
Cc: "Art Lebermann" <artleb@earthlink.net>
Subject: RE: WTB/WTS and a question
Date: Fri, 30 Dec 2005 21:25:22 +0000
Message-Id:
<123020052125.11817.43B5A5C10003D0E200002E292160280651CF04070E@att.net>

-------------- Original message ----------------------
From: "Art Lebermann" <artleb@earthlink.net>
> Brian....
>
> A single cell of a lead-acid storage battery produces 2 volts. I'd guess
> this is the reason for early vacuum tubes with 2 volt filaments?
>
> 73,
> Art Lebermann
> W6REQ
>

> > 2. I am restoring a broadcast/shortwave radio set for my brother. It is
> > an RCA 8BT, battery operated 'farm set' from the 30's.
> >
> > The tubes all have 2V filaments. The radio has two inputs for a filament
> > supply, 2V or 2.5V (the 2.5V input merely inserts a series resistor). My
> > question is....why did anyone manufacture 2V filament tubes and what kind

> > of battery put out 2V or 2.5V? I am building a solid state supply for
> the
> > 2V requirement as well so the question is merely to satisfy my curiosity

Farm radios operated from dry cells or from lead-acid (2 volt) batteries charged by their windmill-mounted generator because the REA (Rural Electrification Administration)hadn't gotten to them yet. Some home radios used dry cells or lead-acid batteries (charged by their 'flivver')or various noxious liquid rectifiers until companies like the Philadelphia Battery Company started making "battery eliminators". An interesting story about that company is that they were sued by RCA (I think) for infrigement of their patents. The company formed another company named Philco, sold the battery eliminators to Philco at a loss, and claimed that they did not have to pay royalties because they did not make money on the sales and didn't sell the radios. Philco said that they did not have to pay royalties because they didn't make the 'battery eliminators'. The courts said "no dice".
Art K3HBA

Date: Fri, 30 Dec 2005 16:34:19 -0600 (CST)
From: Bob Roehrig <broehrig@aurora.edu>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: WTB/WTS and a question
Message-ID: <Pine.LNX.4.61.0512301633380.28938@hermes.aurora.edu>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII; format=flowed

On Fri, 30 Dec 2005, Brian K Harris wrote:

> The tubes all have 2V filaments. The radio has two inputs for a filament
> supply, 2V or 2.5V (the 2.5V input merely inserts a series resistor). My
> question is....why did anyone manufacture 2V filament tubes and what kind
> of battery put out 2V or 2.5V?

A single lead/acid cell is 2V

Bob Roehrig
Aurora University   Telecom dept.
broehrig@aurora.edu
K9EUI W9ZGP WC2XSR/11 WD2XSH/19
630-844-4898   fax 630-844-4222
"Nostalgia is a thing of the past"

Message-ID: <002f01c60db4$fb7326e0$75e47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>

To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: WTB/WTS and a question
Date: Fri, 30 Dec 2005 18:50:33 -0800
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Hi Brian;

> ....why did anyone manufacture 2V filament tubes and what kind
> of battery put out 2V or 2.5V? I am building a solid state supply for the
> 2V requirement as well so the question is merely to satisfy my curiosity.

Lead acid auto batteries produce 2.1 volts per cell. That's where 6.3 and 12.6 volt filaments come from.

My first radio project with a tube was a one tuber with a 30 as detector. Many years went by until I realized the tube was not operating at full emission temperature running on a carbon zinc battery (1.5 volts). I still wonder how it would have performed with proper filament voltage.

Happy New Year!

From: "Dr. Barry L. Ornitz" <ornitz@charter.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Addenda to: High Temperature Adhesives
Date: Fri, 30 Dec 2005 23:35:25 -0500
Message-ID: <001901c60dc3$a03e0240$34e9bf42@barry1>
MIME-Version: 1.0
Content-Type: text/plain;
charset="US-ASCII"
Content-Transfer-Encoding: 7bit

Friends,

In my recent post on adhesives for tube plate caps and other high temperature applications, I noted that receiving tubes and low power transmitting tubes did not reach nearly the temperature of many high-power transmitting tubes. To get a "ballpark" figure, I looked up the maximum surface temperature for a number of tubes. From the RCA Receiving Tube Manual, I found that most tubes have a surface temperature of 200 C or less. A few, like the 6JB6A used by Drake and the 6JS6C used by Japanese manufacturers, can reach temperatures as high as 240 C and 225 C respectively. Some other high power receiving tubes have a maximum surface temperature of 220 C for the 6DQ5, and 6DQ6, 225 C for the 6KD6, and 250 C for the 6LQ6.

For some other tubes we often encounter, I found 260 C for the 6080 and 200 C for the 6082 [R-390 owners note], 220 C for the 6146, 6146A and 6146W, 260 C for the 6146B, 200 and 225 C respectively for the base and plate seals of the 4-400A, and 150 and 200 C respectively for the base and plate seals of the 4-1000, 200 to 225 C for all seals of the 4-65, 200 C for the 572B, 145 C on the seals of the 833A and 250 C for the 6550 popular with audio folks.

So for even many of the high-power tubes which normally require forced air cooling to maintain seal temperatures, their maximum allowable seal temperatures are less than 250 C and sometimes much less. So it looks like for the majority of applications an adhesive rated to 260 C or 500 F is adequate.

As I noted, I have had good success with the Permatex high temperature silicone which is the least expensive option and readily available almost everywhere, and with the Omega-Bond 200 epoxy which is stronger but much more expensive. I have used the Sauereisen cements industrially with good success at temperatures around 1500 C, well above what is required for securing plate caps.

73, Barry   WA4VZQ   Ornitz@tricon.net

From: WA5CAB@cs.com
Message-ID: <156.5ecb6a07.30e76a2e@cs.com>
Date: Fri, 30 Dec 2005 23:59:26 EST
Subject: Re: Addenda to: High Temperature Adhesives
To: Old Tube Radios <boatanchors@theporch.com>
MIME-Version: 1.0
Content-Type: multipart/alternative;
boundary="part1_156.5ecb6a07.30e76a2e_boundary"

--part1_156.5ecb6a07.30e76a2e_boundary
Content-Type: text/plain; charset="US-ASCII"
Content-Transfer-Encoding: 7bit

Barry,

Any idea what the original cement used for plate and grid caps and tube bases was?

Also, does it work better to let the Permatex cure before redoing the solder connection or glue it, solder it and then let the adhesive cure?

In a message dated 12/30/2005 10:36:16 PM Central Standard Time,

ornitz@charter.net writes:
> As I noted, I have had good success with the Permatex high temperature
> silicone which is the least expensive option and readily available almost
> everywhere, and with the Omega-Bond 200 epoxy which is stronger but much
> more expensive. I have used the Sauereisen cements industrially with good
> success at temperatures around 1500 C, well above what is required for
> securing plate caps.

Robert Downs - Houston
<http://www.wa5cab.com> (Web Store)
MVPA 9480
<wa5cab@cs.com> (Primary email)
<wa5cab@houston.rr.com> (Backup email)

--part1_156.5ecb6a07.30e76a2e_boundary
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

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* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*         ---REMAINDER OF MESSAGE TRUNCATED---             *
*     This post contains a forbidden message format        *
*  (such as an attached file, a v-card, HTML formatting)  *
*    Mail Lists at theporch.com only accept PLAIN TEXT     *
* If your postings display this message your mail program *
* is not set to send PLAIN TEXT ONLY and needs adjusting  *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
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--part1_156.5ecb6a07.30e76a2e_boundary--

From: "Dr. Barry L. Ornitz" <ornitz@charter.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: FW: Addenda to: High Temperature Adhesives
Date: Sat, 31 Dec 2005 01:09:36 -0500
Message-ID: <002f01c60dd0$c6bfe020$34e9bf42@barry1>
MIME-Version: 1.0
Content-Type: text/plain;
     charset="US-ASCII"
Content-Transfer-Encoding: 7bit

Robert Downs, WA5CAB, asked:

> Any idea what the original cement used for plate and grid caps and tube
bases was?
> Also, does it work better to let the Permatex cure before redoing the
solder connection or glue it, solder it and
> then let the adhesive cure?

The original glue was a phenolic thermosetting resin with fillers. I believe it was partially polymerized phenol-formaldehyde in composition. As a thermoset, it can take pretty high temperatures. I believe that asbestos brake pads are glued to the shoes with similar resins as well as the asbestos in the pad itself. Until US-23 between Asheville, NC, and Johnson City, TN, was replaced by I-26, it was common to smell the awful phenolic odor from trucks burning their brakes on the steep hills.

Permatex is best cured before the soldering [but in an emergency, soldering may sometimes be done first]. Remember that the one-part silicones will not cure in sections deeper than about 1/4 inch. Two-part silicones, like GE RTV-116, do not have this problem. One-part silicone systems release gases (usually moisture or acetic acid) upon curing; the two-part systems do not. Permatex is as one-part system so use just enough to hold the cap on; do not scrape out the existing phenolic adhesive and fill the cap with the silicone or curing may take many days. If you impede the diffusion of the gas out, the silicone will not cure. This is why if you find an old tube of silicone caulk where the cap has broken and the silicone is cured within the nozzle, you will often find that digging the plug out will reveal uncured silicone beneath.

73, Barry   WA4VZQ   Ornitz@tricon.net

End of BOATANCHORS Digest 3875
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